

## [CLAIMS]

## [Claim 1]

A biodegradable starch bowl being prepared to have a desired shape by heating and pressurizing a composition for the biodegradable starch bowl comprising 5 unmodified starch of 20-60 wt.%; pulp fiber powder of 5-30 wt.%; solvent of 30-60 wt.%; photo catalyst of 0.1-2.0 wt.%; preservative of 0.01-1 wt.%; and releasing agent of 0.5-5 wt.%, and a biodegradable film being attached to an inner surface of the bowl.

## [Claim 2]

The biodegradable starch bowl according to claim 1, wherein the 10 biodegradable film is made of one or more selected from a group consisting of polylactic acid, polycaprolactone, polybutylene succinate, polyethylene succinate, polyvinyl alcohol, polyglycolic acid, ester starch and cellulose acetate.

## [Claim 3]

The biodegradable starch bowl according to claim 2, wherein the 15 biodegradable film has a thickness of 100-300  $\mu\text{m}$ .

## [Claim 4]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the unmodified starch is one or more selected from a group consisting of corn, potato, wheat, rice, tapioca and sweet potato.

## 20 [Claim 5]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the pulp fiber powder has a fiber length of 10 ~ 200  $\mu\text{m}$ .

## [Claim 6]

The biodegradable starch bowl according to claim 5, wherein the pulp fiber 25 powder is made by crushing a broadleaf tree.

## [Claim 7]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide in which an anatase content is 70% or more.

## [Claim 8]

5 The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide doped with one or more selected from a group consisting of  $\text{Fe}(\text{IH})(\text{Fe}^{3+})$ , vanadium (V), molybdenum (Mo), niobium (Nb) and platinum (Pt).

## [Claim 9]

The biodegradable starch bowl according to claim 8, wherein the photo catalyst is a titanium dioxide doped with  $\text{Fe}(\text{HI})(\text{Fe}^{3+})$ .

## [Claim 10]

10 The biodegradable starch bowl according to any one of claim 1 to 3, wherein the photo catalyst is a titanium dioxide added with one or more selected from metal oxides group consisting of silicon dioxide, vanadic pentoxide and tungsten oxide.

## [Claim 11]

15 The biodegradable starch bowl according to any one of claim 1 to 3, wherein the preservative is one or more selected from a group consisting of sorbate, potassium sorbate, sodium benzoate and sodium propionate.

## [Claim 12]

20 The biodegradable starch bowl according to any one of claim 1 to 3, wherein the releasing agent is one or more selected from a group consisting of monostearyl citrate and magnesium stearate.

## [Claim 13]

The biodegradable starch bowl according to claim 12, wherein the releasing agent is a mixture of monostearyl citrate and magnesium stearate having the mixing ratio of 1:1.5 by weight.

25 [Claim 14]

The biodegradable starch bowl according to any one of claim 1 to 3, wherein the solvent is one or more selected from a group consisting of water, alcohol, alkaline aqueous solution and acidic aqueous solution.

## [Claim 15]

The biodegradable starch bowl according to claim 14, wherein the solvent is water.

## [Claim 16]

5        A method for preparing a biodegradable starch bowl comprising steps of:  
          preparing a composition for a biodegradable starch bowl comprising unmodified starch of 20-60 wt.%; pulp fiber powder of 5-30 wt.%; solvent of 30-60 wt.%; photo catalyst of 0.1-2.0 wt.%; preservative of 0.01-1 wt.%; and releasing agent of 0.5-5 wt.% (S1);  
10      preparing a bowl having a desired shape by heating and pressurizing the composition (S2);  
          heating a biodegradable film so as to be softened (S3); and  
          positioning the softened film on an upper part of the bowl and then pressurizing the film into the bowl with vacuum suction or air injection from an  
15      exterior, thereby attaching the film to an inner surface of the bowl (S4).

## [Claim 17]

The method for preparing a biodegradable starch bowl according to claim 16, wherein the biodegradable film made of one or more selected from a group consisting of polylactic acid, polycaprolactone, polybutylene succinate, polyethylene succinate, 20 polyvinyl alcohol, polyglycolic acid, ester starch and cellulose acetate is used in the step of S3.

## [Claim 18]

The method for preparing a biodegradable starch bowl according to claim 17, wherein the biodegradable film having a thickness of 100~300 $\mu$ m is used in the step of  
25      S3.

## [Claim 19]

The method for preparing a biodegradable starch bowl according to claim 16, wherein the film is pressurized into the bowl with the air injection from an exterior and

the vacuum-suction at the same time and thereby the film is attached to the inner surface of the bowl in the step of S4.

[Claim 20]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the unmodified starch being one or more selected from a group consisting of corn, potato, wheat, rice, tapioca and sweet potato is used in the step of S1.

[Claim 21]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the pulp fiber powder having a fiber length of 10 ~ 200  $\mu m$  is used in the step of S1.

[Claim 22]

The method for preparing a biodegradable starch bowl according to claim 21, wherein the pulp fiber powder being made by crushing a broadleaf tree is used in the step of S1.

[Claim 23]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the photo catalyst being a titanium dioxide in which an anatase content is 70% or more is used in the step of S1.

20 [Claim 24]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the photo catalyst being a titanium dioxide doped with one or more selected from a group consisting of Fe(IIT)(Fe<sup>34</sup>), vanadium (V), molybdenum (Mo), niobium (Nb) and platinum (Pt) is used in the step of S1.

25 [Claim 25]

The method for preparing a biodegradable starch bowl according to claim 24, wherein the photo catalyst being a titanium dioxide doped with Fe(HT)(Fe<sup>3+</sup>) is used in the step of S1.

## [Claim 26]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the photo catalyst being a titanium dioxide added with one or more selected from metal oxides group consisting of silicon dioxide, vanadic pentoxide and tungsten oxide is used in the step of S1.

## [Claim 27]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the preservative being one or more selected from a group consisting of sorbate, potassium sorbate, sodium benzoate and sodium propionate is used in the step of S1.

## [Claim 28]

The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the releasing agent being one or more selected from a group consisting of monostearyl citrate and magnesium stearate is used in the step of S1.

## 15 [Claim 29]

The method for preparing a biodegradable starch bowl according to claim 28, wherein the releasing agent being a mixture of monostearyl citrate and magnesium stearate having the mixing ratio of 1:1.5 by weight is used in the step of S1.

## [Claim 30]

20 The method for preparing a biodegradable starch bowl according to any one of claim 16 to 19, wherein the solvent being one or more selected from a group consisting of water, alcohol, alkaline aqueous solution and acidic aqueous solution is used in the step of S1.

## [Claim 31]

25 The method for preparing a biodegradable starch bowl according to claim 30, wherein the solvent being water is used in the step of S1.